

**ABSTRACT****METHOD OF GENERATING A MULTIFIDELITY MODEL OF A SYSTEM**

5        A method of generating a multifidelity model of a system  
comprises the steps of obtaining training data from a high  
fidelity model of the system, providing a low fidelity model of  
the system, providing a kriging model to compensate for  
discrepancies between the high and low fidelity models,  
10    adjusting the kriging model to maximise the likelihood of the  
training data when the low fidelity model, compensated by the  
kriging model, is used to model the system, and generating a  
multifidelity model of the system based on the low fidelity  
model when compensated by the adjusted by the adjusted kriging  
15    model. The system may be a gas turbine or a part of a gas  
turbine for example a tail bearing housing.

(Fig 3)